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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/590,886

08/25/2006

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03/19/2009

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EXAMINER

PAGE, BRENT T

ART UNIT

PAPER NUMBER

1638

MAIL DATE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/590,886	Applicant(s) LEE ET AL.	
	Examiner BRENT PAGE	Art Unit 1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-10 are pending and examined herein on the merits.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1 and 2 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims are broadly drawn to a polynucleotide or a polypeptide. However, the claims do not state that either the polynucleotide or polypeptide, that are naturally occurring in plants, are in any way isolated. Accordingly, the claims are drawn to a product of nature, which is non-statutory subject matter.

See *Diamond v. Chakrabarty*, 447 U.S. 303 (1980), *Funk Bros. Seed Co. V. Kalo inoculant Co.*, 233 U.S. 127 (1948), and *American Fruit Growers v. Brogdex Co.*, 283 U.S. 2 (1931).

This rejection can be overcome by amendment of claims 1 and 2 to indicate that the polynucleotide and polypeptide, respectively, are isolated. New Matter should be avoided.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Haas et al (GenBank Eccession AY088448, 2002 Genome Biology).

The claim is drawn to a polynucleotide that encodes a polypeptide containing all of SEQ ID NO:2, a substantial portion of SEQ ID NO:2 or a polypeptide substantially similar to SEQ ID NO:2.

Haas et al teach a polynucleotide that encodes SEQ ID NO:2 and is annotated as encoding a “cinnamyl-alcohol dhydrogenase-like protein” (see sequence alignment and GenBank Accession Q8L9G4 wherein the polypeptide that is 99.8% identical to SEQ ID NO:2 was submitted in 2002).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baucher et al (1999 Plant Molecular Biology 39:437-447) in view of Sibout et al (2003 Plant Physiology 132:848860), and further, in view of Haas et al (2002 GenBank Accession AY088448).

The claims are directed to an isolated polypeptide of SEQ ID NO:2 or a polypeptide substantially similar to SEQ ID NO:2, a nucleic acid encoding the polypeptide, a method for inhibiting plant growth comprising inhibiting the expression or function of SEQ ID NO:2 with an anti-sense nucleotide in a recombinant vector by introducing the vector by *Agrobacterium tumefaciens* and a process for screening a growth inhibitor of plants by screening a substance inhibiting the expression or function of a polypeptide with cinnamyl alcohol dehydrogenase function, and a composition therefrom wherein the composition includes the anti-sense nucleotide or recombinant vector.

Baucher et al teach a method for inhibiting plant growth and a method for screening a growth inhibitor of plants by screening antisense constructs of alfalfa cinnamyl alcohol dehydrogenase for their ability to inhibit the expression of cinnamyl alcohol dehydrogenase expression and a composition therefrom wherein the composition is the antisense polynucleotide and/or the recombinant vector comprising the anti-sense polynucleotide (see Results pages 439-441, for example wherein a method for inhibiting plant growth and a screening of antisense constructs is demonstrated).

Baucher et al do not teach SEQ ID NO:2 or a polynucleotide encoding SEQ ID NO:2.

Haas et al teach a polynucleotide that encodes SEQ ID NO:2 and is annotated as encoding a “cinnamyl-alcohol dehydrogenase-like protein” (see sequence alignment and GenBank Accession Q8L9G4 wherein the polypeptide that is 99.8% identical to SEQ ID NO:2 was submitted in 2002.

Sibout et al teach the characterization of *Arabidopsis* cinnamyl alcohol dehydrogenase enzymes (see Results, particularly pages 852 and 853, wherein lignin modification and thus plant growth and plant wall stability is affected by mutants) and state in their conclusion “Characterization of a double Atcad-C/Atcad-D null mutant and other Atcad mutants, which is underway, will be very useful for further studies and better understanding of the role of each CAD gene” (see top of second column, page 857).

Given the state of the art that teaches the role of CAD genes in lignin biosynthesis and plant cell wall stability and the usefulness of using CAD genes for manipulating plant growth by reducing CAD gene expression in transformed plants and the availability of CAD genes and methods for isolating CAD genes as taught in the disclosures by Baucher et al, Haas et al and Sibout et al, it would have been obvious to one of ordinary skill in the art to use the polynucleotides and polypeptides taught by Haas et al in the methods taught by Baucher, particularly given the suggestion by Sibout et al to further test the CAD genes of *Arabidopsis thaliana* and that one of ordinary skill in the art would have had a reasonable expectation of success.

No claims are free of the prior art.

No claims are allowed.

Art Unit: 1638

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRENT PAGE whose telephone number is (571)272-5914. The examiner can normally be reached on Monday-Friday 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached on (571)-272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Brent T Page
/Russell Kallis/
Primary Examiner, Art Unit 1638
March 10, 2009